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ON THE COVER: Members of the Laboratory's
Documentary Film group, D-10, examine a new movie
in what they call "the World's Smallest Theater."

A story on the work of this relatively
new LASL group begins on page 2. The cover
photograph was taken by Bill Regan.

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Short Subjects

A \$338,000 contract has been awarded by the Atomic Energy Commission for preliminary design of the proposed Los Alamos Meson Project facility. The firm, Giffels and Rossetti of Detroit, Michigan, has been commissioned to produce an architectural design for development of a cost estimate the AEC can use in a budget proposal. The facility is to be an 800 million electron volt linear proton accelerator for research in meson physics.

That locked gate that guards a strip of the Baca Location on the road to St. Peter's Dome and San Miguel lookout is going to be by-passed this summer. The regional Forest Service office in Santa Fe has announced a \$57,000 contract to build two miles of new road, connecting the existing St. Peter's Dome road with State Highway 4, thus providing free access to the Bandelier back country.

The Golden Plate Award of the American Academy Achievement was presented to Louis Rosen, Alternate Physics Division Leader, in ceremonies June 27 at Oceanside, California. The awards are made annually to leaders in American business, science and the professions as a sort of non-theatrical Oscar. Other recipients during a "Salute to Excellence" weekend at Oceanside included Astronaut John Glenn, Aviatrix Jacqueline Cochran, Sculptor Paul Manship, Inventor H. J. Rand, Meteorologist Bernhard Haurwitz and a score of others. Rosen was cited for his winning of the E. O. Lawrence Award of the Atomic Energy Commission and for his contributions to the understanding of nuclear structure. He also served on a seminar during the weekend, speaking on "Exploring the Atomic Nucleus."



Harold M. Agnew, who returned from France last month after nearly three years on leave of absence, has been named LASL Weapons Division Leader. He replaces Max F. Roy who will continue as Assistant Director for Production. Agnew served as scientific advisor to the Supreme Allied Commander, Europe—Gen. Lauris Norstad and his successor, Gen. Lyman Lemnitzer. Agnew has been with LASL since April, 1943.

Use of the Laboratory's powerful Stretch computer for solving theoretical chemistry problems is described in the July issue of Scientific American. The illustrated article was written by Don L. Bunker of CMF-4 and tells of gas kinetics work with Normand C. Blais, also CMF-4. The experiments, which consumed hundreds of hours of computer time, utilized the so-called Monte Carlo method in which random test conditions lead to results with a high accuracy probability. Bunker noted the computation experiments "have demonstrated they can supplement laboratory experiment and theory, and eventually they may equal them in importance."

A paperbound book listing all 1963 unclassified publications based on LASL research has been prepared and distributed by the Laboratory's libraries group. The bibliography lists 549 publications, ranging from journal articles (285 articles in 84 journals) to U.S. patent papers (six). The publication listings are presented numerically and there are subject and author indexes.

L A S L ' S

M O V I E M A K E R S

A Hollywood in the Jemez it isn't, but the Laboratory is a producer of motion pictures which enjoy an international audience.

You won't see these movies at your neighborhood theater, at least you're not likely to. They are strictly of the documentary variety and feature LASL research. Most of the films are between 15 and 30 minutes in length. All are inclined to feature gadgets more than people.

LASL's "movie industry" has its headquarters in the offices of D-10, the Documentary Film group, on the fourth floor of the Administration Building. George Farnham is group leader; John McCloud and Richard Servas are writer-directors; Jean Hulette is secretary and Girl Friday.

The Laboratory established D-10 just three years ago. A growing need for the services of a motion picture production group was capped by a request from the Space Nuclear Propulsion Office for documentary coverage of Kiwi activities.

Since it came into being, the new group has been concentrating on the production of a continuing

record, in 16mm color motion pictures, of the progress of Project Rover, but many other aspects of LASL research have also been chronicled. Motion pictures are an important form of reporting the activities of the Laboratory because of their ability to communicate complex ideas quickly and simply.

The movie group is responsible for the fabrication of Laboratory documentary motion pictures from the idea phase to the final print. It writes the scripts, directs the photography, and supervises the editing of the film. Most of the photographic work is provided by the movie section of Group D-8 under the supervision of D-10, but occasionally some photographic assistance is obtained outside of the Laboratory.

D-8's contribution includes the handling of most of the mechanical as well as the photographic aspects of documentary film making.

Although a relatively small movie making group, D-10 has been producing finished films at the rate of about one a month. The group's aim is to tell the story with an economy of words and pictures, as well as money. "No matter how

pretty the pictures or how brilliant the narration," Farnham said, "the film's an expensive flop if the intended audience doesn't have time to sit down and watch it."

The group tries to make its reports as interesting and concise as possible, consistent with the subject matter and the known attention span of its audiences—roughly between 15 and 30 minutes for most films.

Nearly all the LASL films are made with the "irreducible minimum" of personnel—one director and one cameraman (plus a sound man in studio situations). D-10 also tries to hold its shooting ratio—the number of shots taken to those used—under 5 to 1. A 10 to 1 ratio is considered good in most film groups, Farnham said.

"We accomplish our objectives with considerably less expenditure in time, film and money than most in-plant motion picture groups," Farnham said, "and we are certainly far ahead of most commercial film producers in economy."

Although most of D-10's films are classified, some have enjoyed open audiences. Unclassified films have



covered a variety of LASI projects. One of the most popular is "Project Rover." This unclassified report on the development of a nuclear rocket engine has been seen around the world. Another has shown the production of ceramic "sponges," a LASI development holding some promise in the dis-

continued on next page

The entire Documentary Film Group observes newly-developed movie footage in the "World's Smallest Theater." Secretary Jean Hulette is at the projector. Seated (left to right) are writer-directors John McCloud and Richard Servas and the group leader, George Farnham.

movie makers

Continued from preceding page

position of radioactive waste material.

The latter caused some embarrassment to H-7 group leader C. W. Christenson two years ago. The film was scheduled to be shown at a waste disposal conference in London but was not completed when Christenson departed for England. It was flown over separately.

Christenson showed the film, went on to France and headed home. Back in this country, the customs inspector noted the film can had not been in Christenson's possession when he went abroad. His suspicions mounted when he saw that the traveler was returning from Paris.

It took a hurried Customs House screening to prove out Christenson's protestations that the film indeed had some hot scenes, but they were radioactive, not racy.

Aside from Rover films, which are a standing assignment, production of a documentary follows a fairly well-defined pattern. First, there must be a request okayed by the requestor's division leader, and the D Division Leader. That signals the start of several weeks of work before a shutter ever clicks.

There is a preliminary conference with the requestor. What kind of subject? What kind of story? And most important: What kind of audience will see the film?

Following research, interviews and more conferences, D-10 writes a "story outline". Simply a general approach to the story, it says in brief form what the film is to cover and lists shooting locations and sometimes describes needed animation.

More conferences. Up to this time new ideas are not only welcome, they are sought. Changes can be made more easily and more economically now than at any other



As writers and directors of documentary motion pictures, John McCloud (left) and Richard Servas spend much of their time doing research and writing and re-writing scripts.

time in the production of a motion picture.

Once the final script has been approved, photographers are called in and the shooting starts. As filming progresses, the D-10 staff views segments of newly-developed film in their closet-sized screening room. A sign on the door calls it the "World's Smallest Theater." It seats three comfortably, has been known to seat eight very uncomfortably.

When shooting is completed, the work follows a standard procedure common to all movie makers: The film is developed and a work print is made from the original footage. Original footage is filed until later. Areas to be treated for fades, and dissolves, splices, and other bits of special effects are marked on the work print. The work print is then projected in synchronization with 16 mm audio tapes containing the sound, a procedure, known as an "interlock."

At this point the requestor has

an opportunity to view the film with sound before the picture and sound track are joined permanently in a "release print." After the interlock viewing, major changes are discouraged because they are expensive, but minor modifications usually can be made.

Once the requestor has viewed and approved the interlock, D-8's film technicians begin the final preparation of the original master print under the direction of D-10.

Development and printing of color movie film is "farmed out" to commercial processors but the D-8 lab does its own black and white movie processing.

Throughout the rather long and involved process of making a documentary movie, planning is of the greatest importance. Ideally, D-10 operates on the principle that: "Except in those rare cases when it would be impossible to obtain a picture otherwise, planning shall always precede shooting."

Good planning saves time and

money in several respects: It minimizes wasted film, reduces time spent on location and most important it minimizes interference with the time of the scientists.

D-10's "non-interference" policy means that the movie makers must be on the scene when the action takes place. Except in very rare cases they don't ask that an experiment be re-created just for the camera. Farnham explains it this way: "D-10 doesn't control the action—the action controls D-10."

In making their films, the directors stress to the requestor that they are motion picture-makers, not scientists. "Various sources of information are used in the preparation of a script, but we depend primarily on the scientist for information and for accuracy in the finished film," Farnham said.

There is similar reasoning behind the desire to know what type of audience will see the finished film. The motion picture should not be so simple that it would insult the sensibilities of a scientist, nor so complex that it would be beyond the grasp of a Congressman unfamiliar with scientific technology.

Unlike Hollywood productions, the LASL filmmakers have no casting problems. When the script calls for people in a certain scene, the "actors" are the scientists, engineers or technicians who are actually involved in whatever is being photographed.

The only real "stars" in these films are the narrators, and they generally remain anonymous. The volunteer voices for D-10 films are LASL employees who have had radio, TV, or theatrical experience. Bill Spack, one time co-owner of radio station KRSN and now a computer engineer, has narrated several D-10 productions. The voluntary narration chores have also been handled by John Lunsford, a physical metallurgist and more recently Richard Servas of D-10 has taken a turn at the mike.



In addition to her strictly secretarial chores, Jean Hulette catalogues scenes and measures the length of new movie footage.

Between "takes" in filming a movie on Project Rover, D-10 Group Leader George Farnham confers with an "actor," LASL Rover Flight Safety Director L.D.P. King. D-8 movie photographers Roy Stone, at left, and Bob Harper check out their equipment.



Watchdogs In the Sky Get Re

ANOTHER PAIR OF VELA SATELLITES WITH LASL-BUILT RADIATION SENSORS ARE ORBITING 60,000 MILES IN SPACE

Two more bundles of LASL-built radiation sensors went rocketing into orbit July 17 with the successful launch from Cape Kennedy, Florida, of the second pair of Project Vela nuclear test detection satellites.

The instruments are the eyes for twin spacecraft that are in circular earth-orbits nearly 60,000 miles away, similar to the first Vela space sentries that were launched in October 1963.

Although it will be many weeks before all systems have been checked out by the ground tracking and data reduction stations, early reports indicated the detectors and logics equipment were working well. Each of the 400-pound, 20-sided satellites has 19 detection instruments, sensitive to X ray, gamma and neutron radiation.

The Laboratory's P-4 and P-1 groups created two new types of detection devices for the second set of satellites. They replace two of the X ray detectors that protrude through the solar cell surfaces of the spacecraft.

Both instruments will yield previously unattainable scientific data on natural cosmic radiation conditions and at the same time contribute to the primary Vela mission—keeping a lookout for nuclear detonations in space.

One of the instruments is a charged particle analyzer. On radio command from earth it can "see" either positive or negative atomic particles, count their number, determine energies and their direction of travel. It is expected to be

of special value in studying the so-called "solar winds" and in gathering additional information on the vast clouds of charged particles on the dark side of the earth that were discovered by the first Vela satellites.

The second new instrument will specialize in solar X ray observations. It can report on energies, discriminated into broad bands somewhat like a spectrum, and can "read" solar radiation fluctuations

with accuracy to a thousandth of a second.

The first twin satellites have been extremely successful and continue to function even though their designed life was only six months. As a result of the initial success all second generation instruments were refined.

Sandia Corporation has made similar advances in the on-board logics and electronic equipment it supplied for the satellites. Noteworthy is a system that compares detector outputs in a way that separates known natural background radiation from that common to a nuclear burst. This is regarded as an important step in reducing the "false alarm" rate of the sentries.



Eleven staff members and technicians from P-4 and P-1 were at Cape Kennedy for the Vela countdown and launch. Pictured in an instrument room are (left to right) Ian Strong, Roy Olson, Ralph Greenwood, William Aiello, William Everett, Paul Glore, Ray Klebesadel, Eldon Stogsdill, James Coon, Sam Bame and Sidney Singer. After the launch, the group went west to the Satellite Tracking Center at Sunnyvale, California, and joined Jerry Conner and Jack Asbridge for the initial reports from the orbiting spacecraft.

inforcements

Placement of the satellites in their orbits was a masterful bit of rocketry, even more remarkable because it was the second time in a row the Air Force had successfully performed the launch and orbit-injection procedures. The July operation was an almost carbon copy of the first launch nine months earlier.

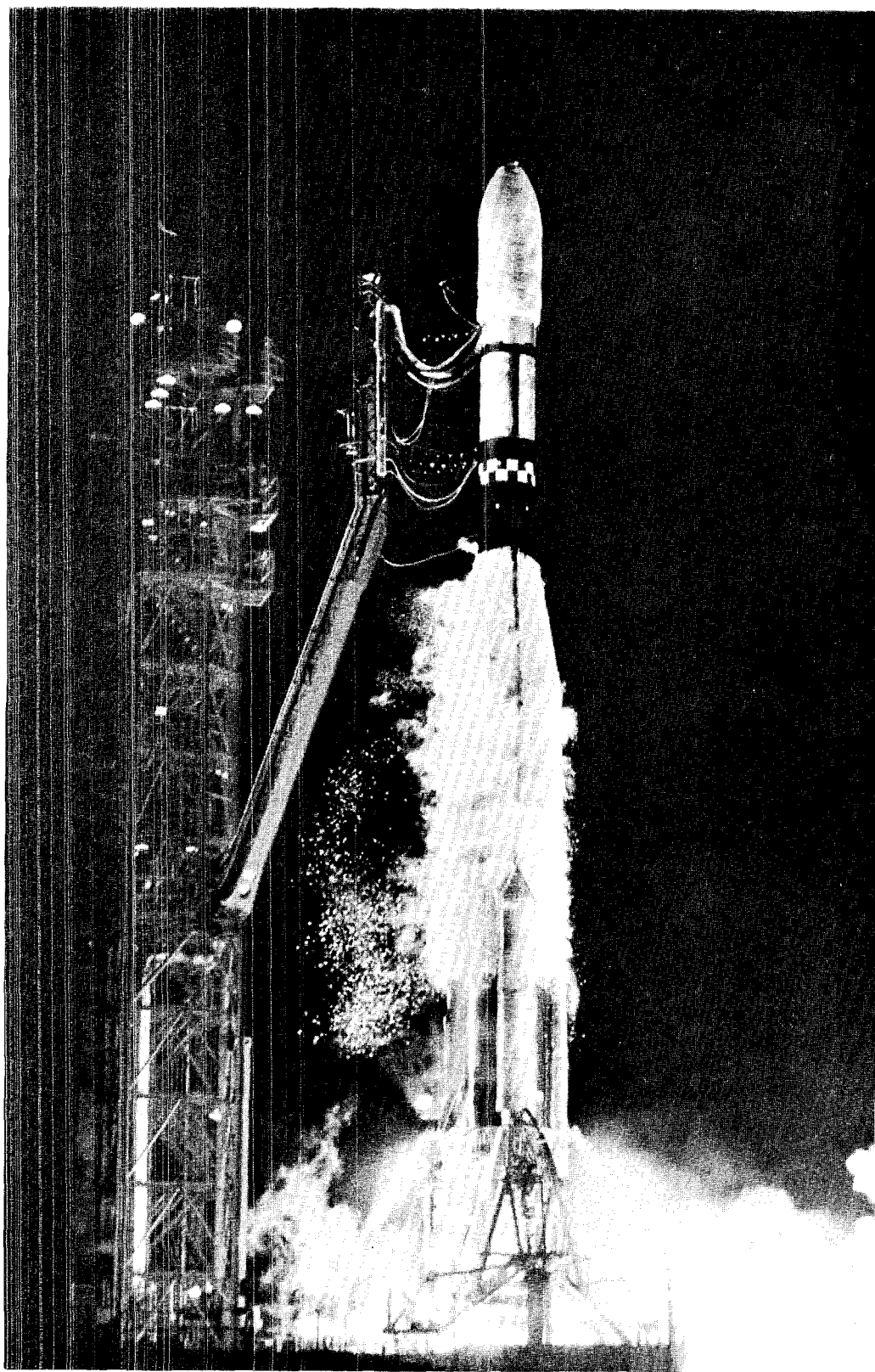
Mounted tandem inside an elongated nose cone, the satellites were boosted into space by a two-stage Atlas-Agena rocket, 10 stories tall. Once outside the earth's atmosphere the protective nose cone split apart and fell away. When the boosters burned out compressed springs were released to push the tandem mount free and jets of compressed gas started the assembly spinning at two revolutions per second. Another mechanical device then pushed the two spacecraft apart.

A solid-fuel rocket inside one of the spinning spacecraft was ignited to push it into orbit. The second capsule was allowed to fall into a natural elliptical orbit that carried to about 200 miles from earth and out to apogee a second time, when it was injected into orbit, circular like the first but trailing by about 140 degrees.

The launch and orbit maneuvers took about 72 hours.

The satellite program is funded by the Advanced Research Projects Agency of the Department of Defense in cooperation with the Atomic Energy Commission and the Air Force. Construction of the spacecraft and ground testing of the instrumented satellites is done by Space Technology Laboratories of Redondo Beach, California.

The four satellites lofted so far are not regarded as part of a truly operational space detection network, only as research vehicles in a study to determine if such a sky-scanning scheme is feasible.



Outward bound, Atlas-Agena booster is seen at moment of ignition. Tandem mounted satellites are inside nose cone, protected by insulating blanket that was stripped away an instant after the photograph was made.

State Route 4

THE HISTORY HIGHWAY

The very next time somebody finds some money to finance a set of historical markers, State Route 4 ought to get its share. Mile for mile, it would be hard to find a comparable 100-mile stretch of road more packed with history, much of it still in the making.

Highway 4 starts at State Route 76, in the Sangre de Cristo Mountains, near the village of Cundiyo. It wanders through the juniper and sage-covered hills behind Santa Cruz Dam and emerges near Nambé Pueblo. It winds through the Pojoaque junction interchange to become the main highway to Los Alamos, merging with State Route 30 near Otowi. It divides at the White Rock-Bandelier "Y" to send

two branches through Los Alamos, coming back together at the foot of the Jemez grade at the old Los Alamos west gate. From there it goes over the mountain.

At its southern terminus, in the village of San Ysidro, it joins State Highway 44 from Bernalillo to Cuba, after passing through Jemez Springs and Jemez Pueblo. From San Ysidro south it is a part of Highway 44.

Until recently the Jemez section of State Route 4 was a sometimes thing, hub-deep in dust or mud and tire-slashing rocks all summer, closed by snow all winter. It was once described by a New York Times travel writer as one of the Southwest's loneliest roads and the

description was not far off. Few went that way unless they had to, or didn't know any better.

Over the last 12 or 15 years, however, road improvements have been reaching from both ends toward the middle. Los Alamos County spent some of its gasoline tax funds back in the early 1950's to improve the stretch between the old West Gate and Sawyer's Hill, then the community ski run.

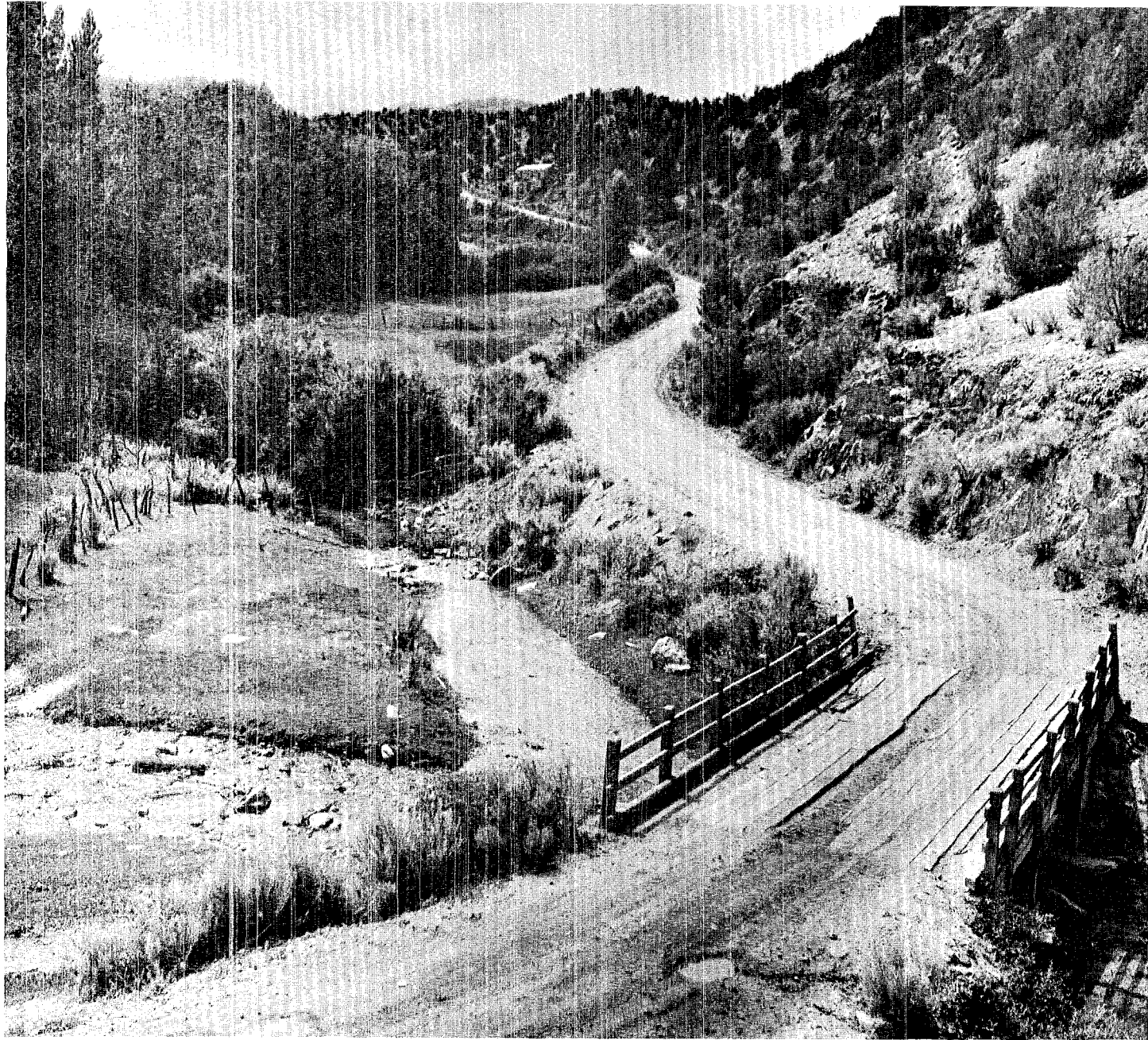
In the summer of 1959, the U.S. Bureau of Public Roads (because the right-of-way was through a national forest) paved the first seven miles of mountain grade, east to west. By 1963, the Bureau had extended pavement across the Valle Grande to its present terminus at the intersection of the Ponderosa road (State Route 290), near the Vallecitos de Los Indios. A new contract was let this summer to extend the improved road a little more than three miles west, to a point beyond the East Fork campground on the Jemez.

Working from the other end, the New Mexico Highway Department has paved the route up to a point just past Jemez Springs, and is now working on a three-mile stretch between there and La Cueva. The pavement should reach La Cueva by the end of next year, leaving only about 12 miles unpaved at the Los Alamos end.

At La Cueva, State Route 126 intersects from the west, leading a rough 40 miles over the mountains to Cuba. Some improvements are in sight for this road also. It is still the only one that goes all the way over the mountain to serve the vast

Highway 4 is almost lost in this maze of roads and signs, but it actually runs under the overpass where its highway marker is just visible. Here it becomes the principal route to Los Alamos from Pojoaque junction.





wilderness area known as the San Pedro Parks.

Paved or unpaved, the road traverses an almost complete panorama of New Mexico history, from a ten-million-year-old volcano to the world of tomorrow at Los Alamos. There are pre-Columbian Indian pueblos at both ends and in between, the ruins of a 17th Century Spanish mission, a huge cattle ranch reminiscent of the old West, numerous modern campgrounds, several resorts, a national monument—they are all there, all lined up for picture taking in a setting of spectacular alpine beauty, flower-studded

Near Chimayo, State Route 4 crosses the junction of Rio del Medio and Rio Frijoles which combine at this point to form the Santa Cruz river flowing into Santa Cruz lake.

mountain parks, deep pine, fir, spruce and aspen forests.

Highway 4 provides access to most of the Santa Fe National Forest's Jemez forest camps—18 of them in all, if you count the ones along State Route 26 and one over on the north side of the range on the Rio Puerco. Highway 4 also is the outlet for timber cut in a selec-

tive Forest Service program, most of the logs being hauled out to Ponderosa, above Jemez Springs.

The highway is the lifeline for the 100,000-acre Baca ranch, which occupies the great Jemez Crater and spills over the sides a bit. Incidentally, it is not really a crater, but one whose roof has fallen in and is therefore called a caldera. Whatever else it is, it is one of the world's largest volcanic holes in the ground. It is 50 miles around, encompassing nearly 200 square miles. Ngorongoro Crater in Tanganyika, Africa, said to be the world's largest (and

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HISTORY HIGHWAY

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much better known), covers only 126 square miles.

Numerous cone-shaped peaks, big and little, sticking up here and there in the Jemez Caldera, are secondary volcanic formations, erupting after the original crater had collapsed into a vast lake bed. The largest of the peaks, towering 11,250 feet, is Redondo Peak in the southwest corner. These peaks, which give the caldera the appearance of a series of connected valleys, for years concealed the fact that the whole thing had been one huge volcano, until aerial mapping revealed its unmistakable circular shape.

The old name for the area, still showing on some maps, was Los Valles, Spanish for "the valleys." One of the largest of the valleys, the Valle Grande, is the part bordered by Highway 4. Its name is often applied to the entire crater, mistakenly but not without good reason.

A portion of the Valle Grande has been proposed, in a bill now before Congress, for attachment to adjacent Bandelier National Monument, to form a new Valle Grande-Bandelier National Park. The AEC, which owns nearly all of also-adjacent Los Alamos County, has al-

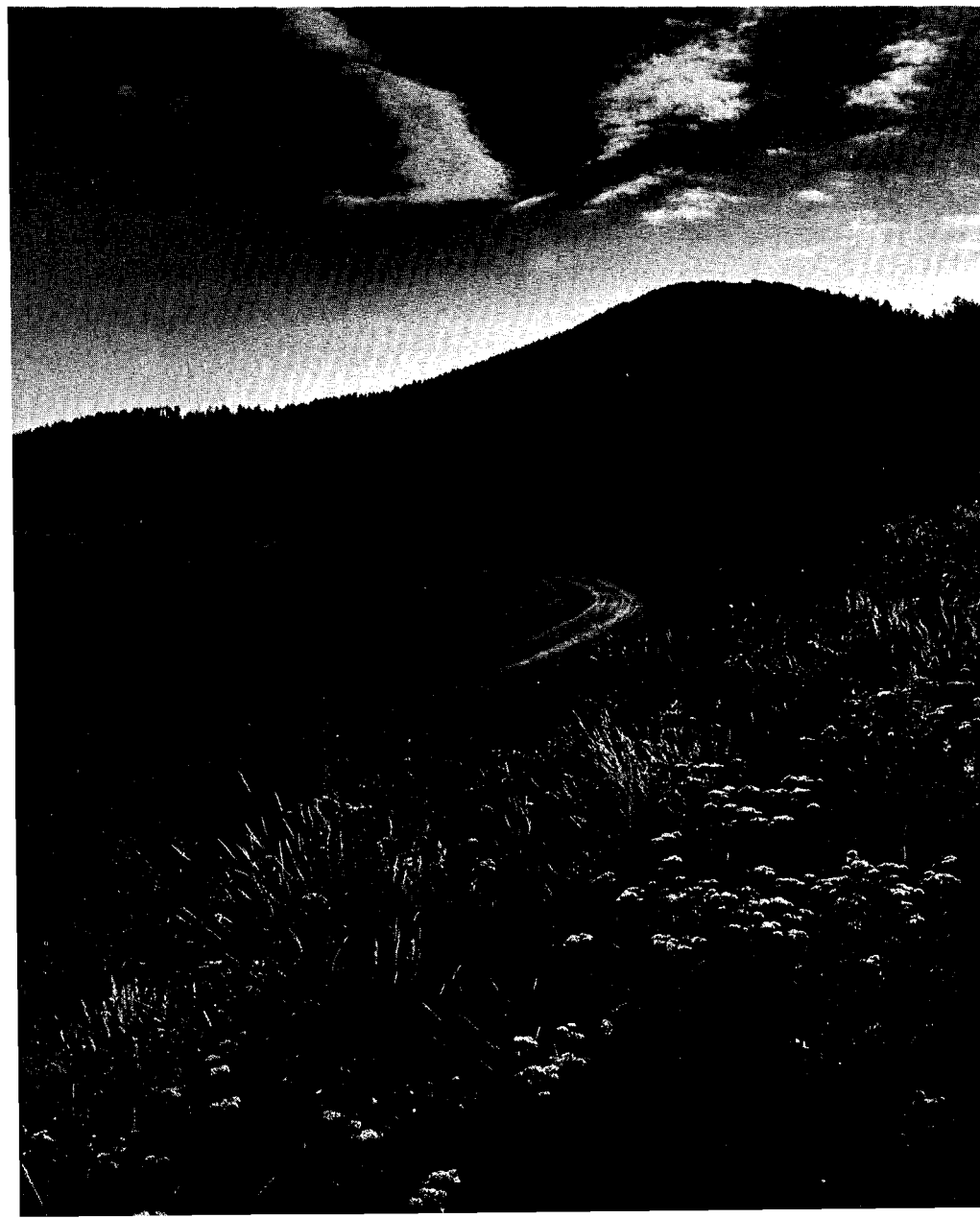
ready decided several thousand acres of forest land along Highway 4 to the Park Service to provide a corridor between the present monument lands and the proposed park area. Already the Park Service has improved some old roads and established picnic areas in the corridor, overlooking the thousand-foot gorge of the upper Frijoles with its sheer cliffs and hidden beaver ponds.

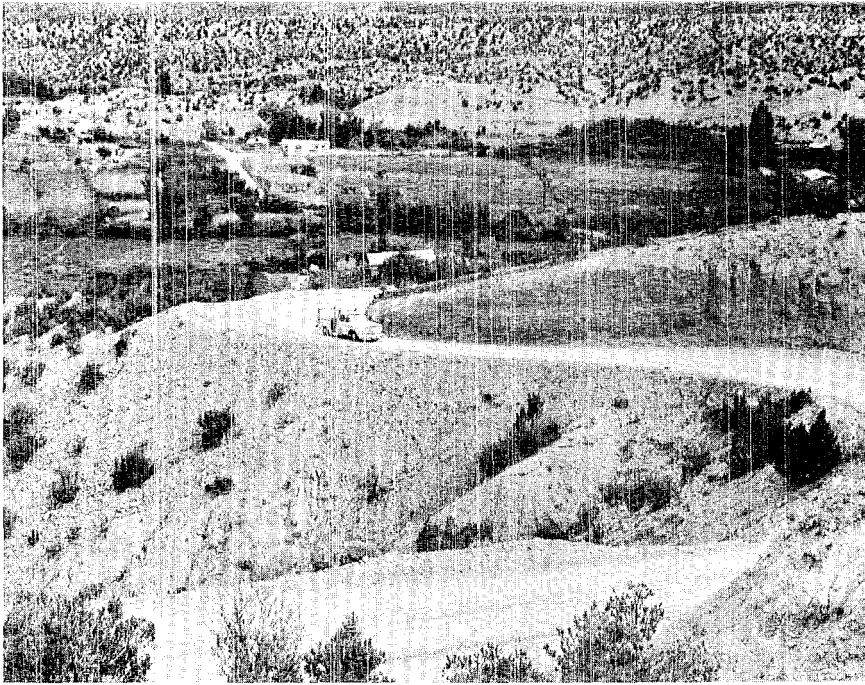
In anticipation of an influx of visitors this year (100,000 registered last year), the main campground has been moved out of Frijoles Canyon, where it had no room to grow, up on the mesa alongside Highway 4 near the Monument entrance station. A 100-unit modern campground went into operation there this spring. The facilities down in the canyon have been turned into a walk-in picnic area, close to the visitor's center, the museum, the lodge and restaurant. Self-guided tours to the 13th Century Pueblo Indian ruins lining the cliffs start there.

With funds from the national Accelerated Public Works program, native labor from the area has been employed for a year on extensive improvements to trails in the Monument, including some in the previously inaccessible back country of the upper Frijoles. Another trail from the picnic area halves the previous nine-mile walking distance to the ancient Shrine of the Stone Lions and the nearby Painted Cave, adorned with ancient (and modern) picture writings.

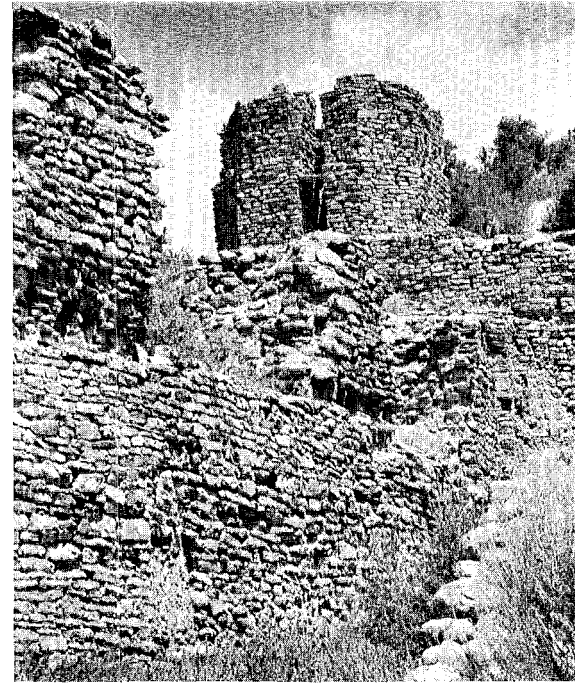
Where Highway 4 dips into the Valle Grande, over the 9,000-foot summit of the Sierra de Los Valles, leaving Los Alamos County to enter Sandoval County, it follows a really ancient route. Comanches, Apaches

Wildflowers line Highway 4 as it crosses the eastern edge of the Valle Grande, in the great Jemez caldera. The vast scene is singularly beautiful just after a summer rain.





State Route 4 starts out as a twisting mountain grade, shown here as it climbs out of the valley below Cordova, from its junction with State Route 76.



The ruins of Jemez Mission, an imposing 17th century structure now protected as state monument, overlook Highway 4 at the little mountain town of Jemez Springs.

and Navajos came this way to prey on the river and mesa pueblos long before the Spanish occupation. The Spanish in turn chased the nomadic tribes back over the mountain by this route. It was used for cattle drives and by logging teams from the 1870's down to the present day. It was used by the American Army to supply a fort in the Valle Grande in the 1860's, when the crater was an important source of hay for Army horses and mules. In between, it was and still is used by ranchers, hunters, fishermen and campers.

Once the highway is paved all the way, and perhaps before the paving is completed, it will be an all-year highway, accessible through the winter months for the first time in its long history. It is in the time of the big snows that the crater is best seen. Only the high, black peaks of the rim show up above the unbroken white bowl of the great caldera, marching around in a circle whose far edge is a blue line on the horizon.

There is another route across the mountains, but it is not a public road and is travelled only by gas company officials. This is the natural gas pipe line serving Los Alamos, stretching 140 miles from the San Juan Basin near Farmington. The line, and its paralleling service road, crosses the caldera along its northern edge, along the seldom-seen headwaters of San Antonio Creek, emerging from the hills at Cuba.

A rapidly-growing herd of elk, planted by the State Game and Fish Commission many years ago, is thriving on the upper San Antonio. There are also many mule deer, coyotes, beaver, and smaller animals. Eagles, hawks, vultures, and small birds are abundant. An early-morning ride on Highway 4 across the crater after a summer rain is a special treat for bird lovers, as every roadside puddle will be literally alive with bluebirds, several varieties of sparrows, juncos,

finches, buntings, Audubon warblers, and a host of others.

Wild flowers also grow with abandon along the road, particularly mountain sunflowers, lavender bee-balm, mountain asters and daisies, and the lovely Mariposa tulip in white, yellow and mauve shades. New Mexico has more varieties of wild plants than any other state in the union, and a good many of them grow along the route of Highway 4.

Old timers are wont to deplore the paving of the route, but others acclaim it for the simple reason that the absence of dust has enabled them to see the countryside clearly for the first time. This is particularly true during the aspen season, when a trip across the Jemez provides a golden journey through miles of aspen groves, in color so intense it hurts. Cars are likely to be lined up bumper to bumper on a Sunday afternoon aspencade, but everybody can see the trees and the crowds do not seem to matter.



"After all, it's only a game."

Croquet International

The pursuit of controlled thermonuclear reactions is an international activity. Scientists engaged in it frequently gather to exchange data and ideas.

One of these reciprocal meetings was held in Los Alamos in early July. Participants were Project Sherwood researchers from LASL and seven Russian scientists. They talked about fusion and magnetic confinement and plasma instabilities.

When the shop talk was concluded the party toured the countryside, taking in San Ildefonso Pueblo, the ruins of Bandelier, the vastness of the Valle Grande and the informality of a picnic in Jim Tuck's back yard on 35th Street.

Tuck, who heads the Sherwood program at Los Alamos, has a spacious yard. There was room enough and time enough for an exciting round of another international activity—croquet.

"This way, aim it this way!"

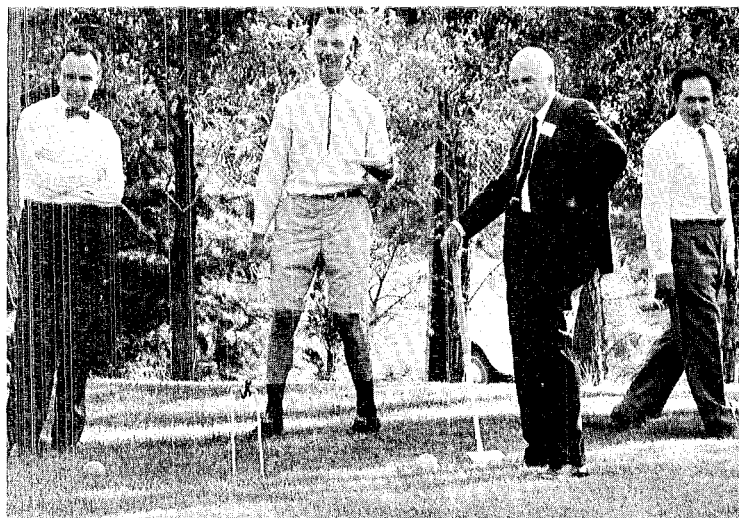


"That's what I call international cooperation."





"... and I say TWO points!"



"I say, I had no idea that gopher hole was that big."

"Look at that ball go!"





A trailer containing air sampling equipment is towed to a station 16,000 feet from a Kiwi reactor to be tested at the Nuclear Rocket Development Station in Nevada. The com-

pact equipment will gather information on radioactive material released during the operation of the reactor. The data is essential to the safety of personnel.

H-8 at NRDS: RIDING HERD ON RADIATION

Work is going on today to insure the safety of tomorrow's nuclear-propelled rockets. Much of the effort is being made by 11 LASL health physicists who make up the Health Division group H-8. Their task: Study, evaluate, and even predict the radiation safety problems associated with the testing of nuclear reactors which the Laboratory is developing for the Project Rover rocket.

Members of H-8 have been measuring radioactivity released from every experimental Rover reactor that has been ground tested since the first Kiwi hot run was conducted in July, 1959. There have been seven such tests to date.

Radiation data gathered by H-8 has already affected the design of some reactors, as well as the construction of the test cells where the Kiwis are tested at the Nuclear Rocket Development Station in Nevada.

The members of this group travel to Nevada about a week before a reactor test is scheduled. They station air samplers around the test

site to monitor airborne radioactive particles. They place neutron and gamma detectors at strategic points on the reactor itself and at various distances up to 3,000 feet away from it.

H-8 receives permanent support at NRDS from a dozen personnel of the Reynolds Electrical and Engineering Co. When a reactor test is to be held, the group is further implemented by an additional 20 REECo radiation safety people and at times from other H-Division groups.

Following the test of a Kiwi reactor, detectors and samples are picked up and taken to H-8's building at Mercury—the "Mouse House"—to be analyzed.

H-8 Group Leader Harry Jordan said the most immediate concern for reliable radiation information is the safety of persons in the vicinity of reactor tests.

Ultimately, however, the data which H-8 is gathering will assist in predicting possible hazards connected with actual flights of nuclear rockets.

The group wants to know how the reactor power level affects the amount of radioactive material released; how effective are different kinds of shielding; how weather conditions affect the dispersal of the radioactive effluent.

Later on there will be other questions to answer: What special precautions must be taken during a rocket launching? What are the dangers in case of an accident? Could the nuclear rocket be op-

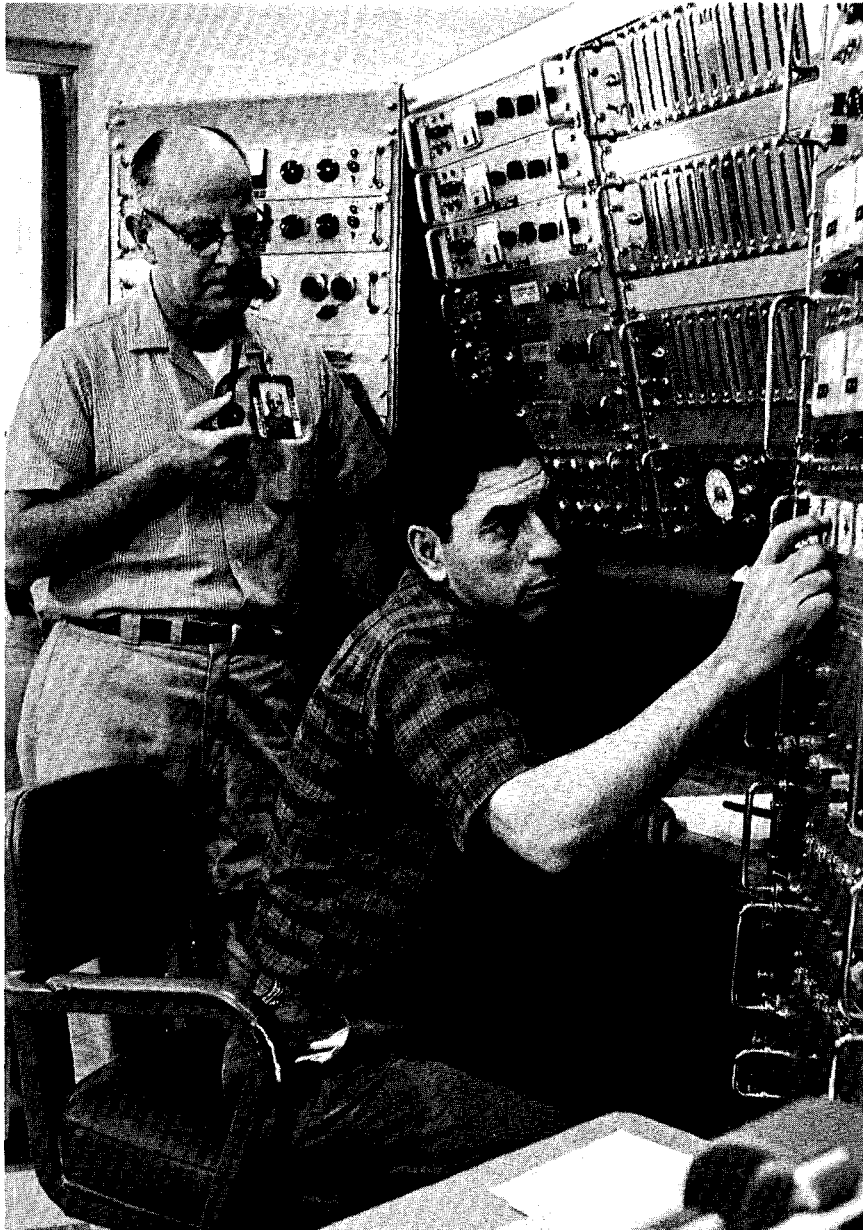
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FACING PAGE: Bruce Riebe, H-1, and Fred Worman of H-8 install one of many neutron and gamma detectors which are placed at strategic points near a Kiwi reactor before a test.





Monitors check an H-8 truck for possible radioactive contamination as it returns from Test Cell "C" following a test.



H-8

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erated in the earth's atmosphere without endangering the public?

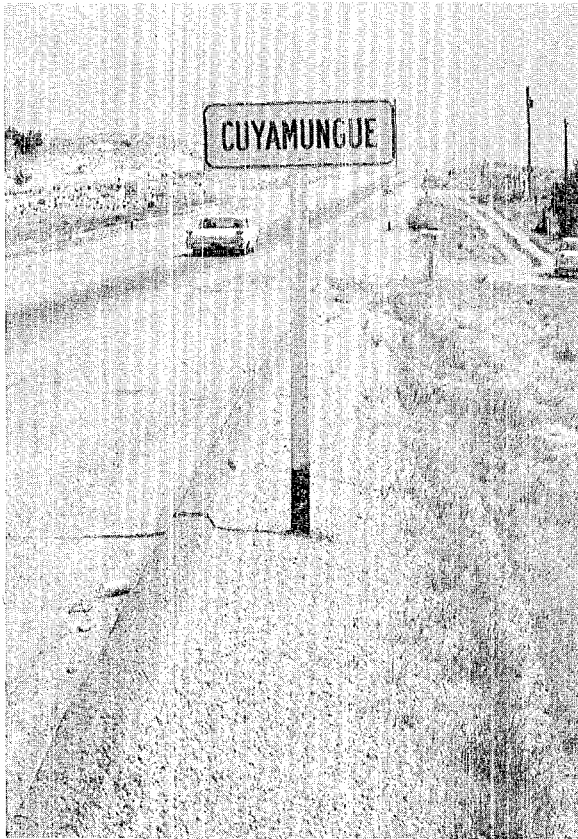
To obtain meaningful statistics, H-8 must collect information from as many Kiwi reactor tests as possible. Jordan explains that each reactor is different in design, in its running time and power level. Every reactor is tested under varying weather conditions. All these factors, he points out, influence the data.

H-8 is attempting to "weed-out" the more extreme variables to arrive at a valid set of statistics which will apply to all reactor runs.

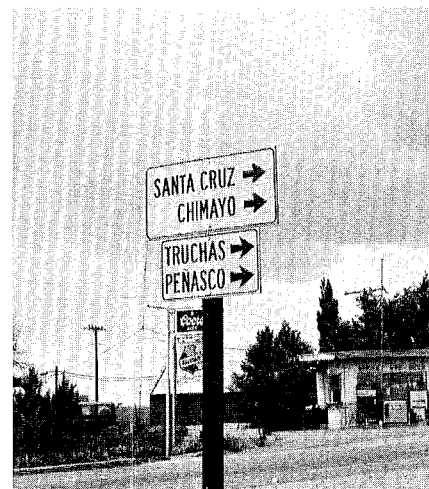
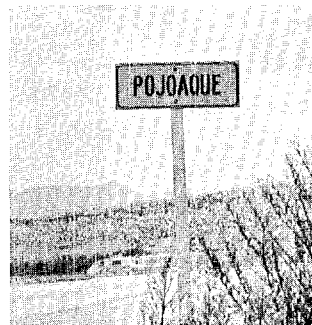
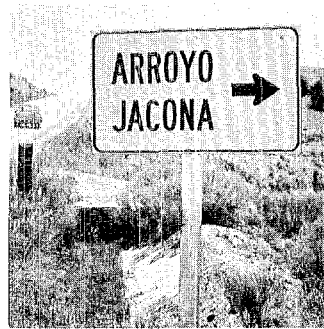
The group is gradually refining its data and double checking it to make sure that the testing of larger reactors, in the near future, will pose no hazards either to operating personnel or to the general public.

Fred Worman and Frank Montoya, both of H-8, calibrate instruments in the fission foil counting room of the new "Mouse House" at Mercury.

SIGN LANGUAGE



Pity the poor tourist! Unless he is from the West where he has been exposed to the Spanish idiom, he will be thrown for a loss by signs that use an I for an E and an E for an A and a J for an H and a GUE for a GAY. Try telling an Easterner how to get to Los Alamos over the Jemez road, or through Tesuque to Pojoaque junction and across the Rio Grande at Otowi. A Spanish-English dictionary is no help, either, since so many of these place names are Spanish phonetic spellings of Indian words whose origins have been lost.



Derby Day on Central Ave

THERE WAS ALL THE EXCITEMENT OF INDIANAPOLIS
WITHOUT THE ROAR AND SMOKE OF ENGINES

For 50 excited young contestants, their harried parents, and nearly 1,500 cheering spectators, July 18 was Soap Box Derby Day in Los Alamos.

Crowds gathered along a roped-off portion of Central Avenue, east of the Community Center, to watch tiny gravity-driven cars race two at a time down the 975-foot course at speeds approaching 25 miles an hour.

There were no screaming engines or clouds of exhaust smoke but otherwise the event resembled Indianapolis on Memorial Day. Contestants marched in a pre-Derby parade that was complete with

fire engines, honor guard and a Soap Box Derby Queen—13-year-old Amy McCormick.

It was Los Alamos' first Soap Box Derby but the sponsors—the Los Alamos Jaycees and Art Houle Chevrolet of Espanola—are already making plans for next year.

Contestants were Los Alamos, White Rock, and Espanola boys between the ages of 11 and 15. Each had to build his own car, using certain standard parts such as official Soap Box Derby wheels, axles, and braking and steering assemblies.

Cars' width, height, weight and type of construction were guided by rather rigid specifications. Just before racing, car and driver were weighed-in. Their combined weight could not exceed 250 pounds.

Each contestant had a sponsor who put up a fee of \$35.60 to defray most expenses in building the cars. Sponsors included Los Alamos and Espanola merchants, Hill service clubs and three LASL groups, W-1, GMX-7 and ENG-1.

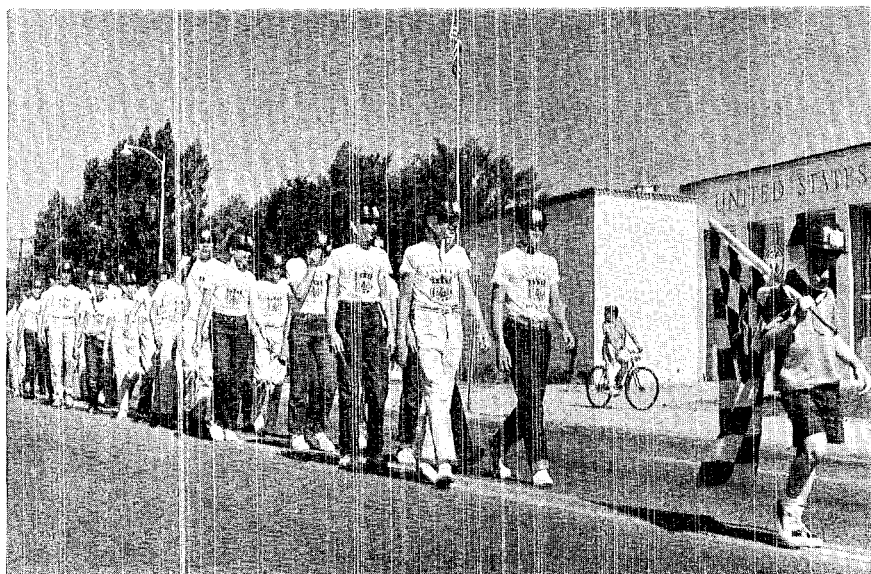
Although some of the boys entered the derby only a few weeks before the race, most entrants began working on their cars as early as four months prior to Derby Day.

For those who were eliminated in the early heats of the race, it was a lot of work for one or two trips down the hill. There was a certain amount of glory for those whose cars rolled a little faster.

Happiest boy of the day was 13-year-old Bill Heath, son of Mr. and Mrs. William R. Heath of White Rock. Young Heath, whose sponsor was his father's firm, Ponderosa Transit-Mix took first place. He won prizes of a \$500 savings bond, an engraved trophy, a silver medal, and best of all—an all-expense-paid trip to Akron, Ohio, and the chance to compete in the National Soap Box Derby to be held there on August 15.



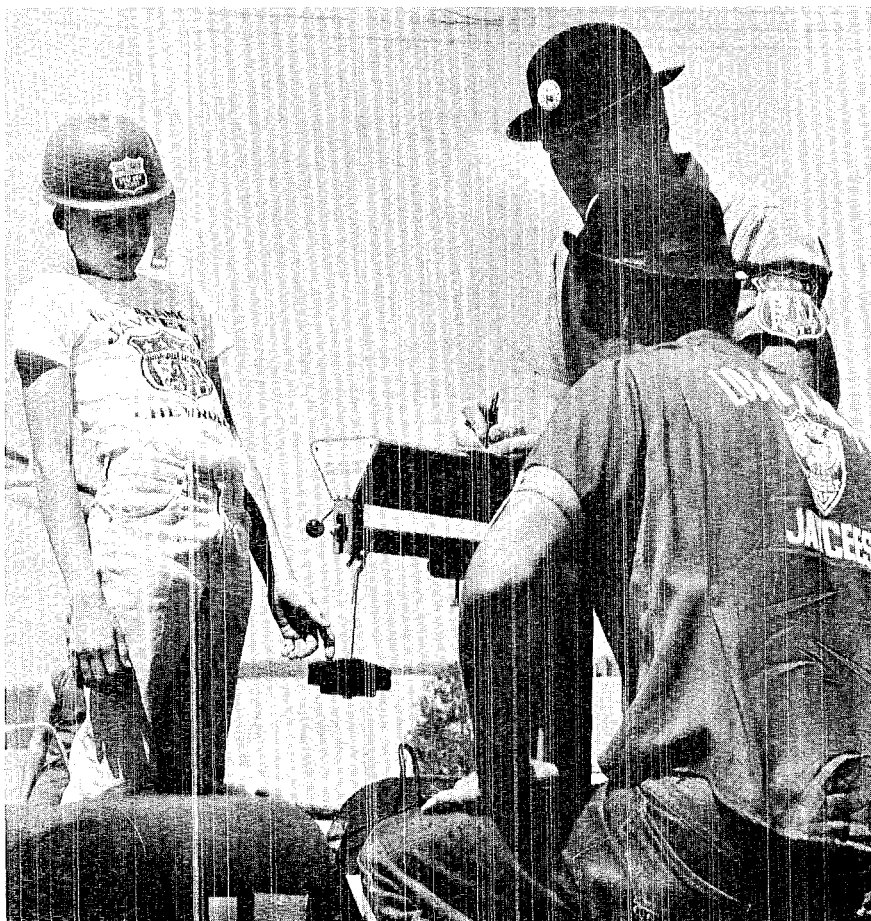
Hans Schueter gives the checkered flag to Scott Duge as the winner of this heat in Los Alamos' Soap Box Derby.



Contestants marched in a pre-race parade complete with fire engines, honor guard and a Soap Box Derby Queen.



The suspense got downright gripping at times but nearly everybody had a good time.



Steve Downie and his car, sponsored by Laboratory group ENG-1, are weighed-in by Jaycee officials Vic Nitz and Al Juveland. Combined weight of car and boy could not exceed 250 pounds.





SOAP BOX DERBY. . .

continued from preceding page



Above: Charles Young (center) gets some last minute advice from friends Brian Sojka, at left, and Gerald Antos just before the race.

Left: Entrants get their final instructions from officials before moving their cars out to the starting line on Central Avenue.

Below: Starting flagman John Allen signals the start of one of the heats. Clarence Courtwright releases the cars and the race is on!



*... and every race
has its winner ...*

With his tongue out, 13-year-old Bill Heath gets the checkered flag as he crosses the finish line and becomes the winner of Los Alamos' first Soap Box Derby. Somewhat restrained earlier, the spectators were literally roaring with excitement at this point in the race.

Among the first to offer their congratulations were members of the sponsoring Los Alamos Jaycees, easily recognizable by the derby hats they wore.



Holding the checkered flag waved his way so often during the day, young Heath gets a boost into a pickup truck for a ride back to the starting line.

With the symbolic flag in hand, Heath makes a final run down the asphalt course to accept the spectators' cheers.



The

Technical

Side

Symposium on EMP Effects on Military Systems, sponsored by Air Force, Army, Navy, DASA, at Air Force Systems Command, Hanscom Field, Mass., May 21-22: (Classified)

"Gamma Rays from Atomic Bombs" by John Malik, J-DO.

Annual Salute to Excellence Week-end, "Captains of Achievement" program, Oceanside, Calif., June 25-28: (Sponsored by the American Academy of Achievement and Oceanside Chamber of Commerce)

"Exploring the Atomic Nucleus" by Louis Rosen, P-DO.

Symposium on Genetics, Jackson Memorial Laboratory, Bar Harbor, Maine, June 29-31 and July 1:

"Observations on Life Span, Radioresistance, and Productivity in Offspring from 5 to 25 Generations of X-Irradiated Male Mice" by J. F. Spalding, Mary Brooks, and Paul McWilliams, all H-4.

International Conference on Nuclear Physics, Paris France, July 2-8:

"A Measurement of the Neutron-Proton Depolarization Parameter at 23 MeV" by Roger B. Perkins and James E. Simmons, both P-DOR.

"(He^3 , d) Reaction on Ni^{58} , 60 " by Allen G. Blair, P-12.

American Physical Society Meeting, Denver, Colo., June 25-27:

"A Numerical Solution of Heat Transfer in the Karman Vortex

Wake of a Rectangular Cylinder" by Jacob E. Fromm, T-3.

Project SETE, New York University, College of Engineering, New York City, July 9:

"NET-1 Network Analysis Program" by Allan F. Malmberg, T-7.

Symposium on Concentrated Vortex Motions in Fluids, Ann Arbor, Michigan, July 6-11:

"Results of Numerical Studies of Incompressible Flow, Using a Difference Approximation of the Vorticity Equation" by Jacob E. Fromm, T-3.

EANDC Conference on the Automatic Acquisition and Reduction of Nuclear Data, and Seminar at Karlsruhe Laboratory, Karlsruhe, Germany, July 13-16:

"Experiments with Polarized Protons and Their Interpretation" by Louis Rosen, P-DO.

"A Review of Characteristics of Available Small Computer Systems with Regard to their On-Line Application" by Jules S. Levin, P-DOR.

American Crystallographic Association Meeting, Bozeman, Montana, July 27:

"Comparison of Scattering Factors Computed from Four Different Atomic Models" by Don T. Cromer, CMF-5.

WHAT'S DOING

All times listed
are Mountain Daylight Time

SANTA FE OPERA: Tickets, at \$2.80, \$4, \$4.50, \$5.50, \$6.80, available at Los Alamos Building & Loan, Tuesdays and Thursdays, 10 a.m. to 1 p.m. Opera curtain time 9:30 p.m., MDT.

Wednesday, August 5, "Carmen."

Friday, August 7, "La Boheme."

Saturday, August 8, "Gianni Schicchi" and "L'Enfant et les sortilèges."

Wednesday, August 12, "Lulu."

Friday, August 14, "Lulu."

Saturday, August 15, "Carmen."

Wednesday, August 19, "La Boheme."

Friday, August 21, "Carmen."

Saturday, August 22, "La Boheme."

Wednesday, August 26, "Rigoletto."

Friday, August 28, "La Boheme."

Saturday, August 29, "Rigoletto." (last scheduled show of the season)

FILM SOCIETY: Civic Auditorium. Films shown 7 and 9 p.m. unless otherwise noted. Admission by season ticket or 90 cents single admission.

Wednesday, August 5, "Knife in the Water." Polish drama, 95 minutes.

OUTDOOR ASSOCIATION: No charge; open to the public. Contact leader for information on specific hikes.

Thursday, August 6, Evening hike.

Leader, Betty Perkins

Sunday, August 9, Santa Fe Baldy and/or Lake Katherine.

Leader, Don Rose

Thursday, August 13, Evening hike.

Leader, Don Rose

Saturday and Sunday, August 15 and 16, San Pedro Peaks area off State Road 4 near Cuba.

Leader, Bob Day

Thursday, August 20, Evening hike.

Leader, Roger Perkins

Sunday, August 23, Rio Medio

Leader, Terry Gibbs

Thursday, August 27, Evening hike.

Leader, Don Rose

Saturday, August 29, Trampas Lakes or San Leonardo Lakes

Leader, Ken Ewing

LOS ALAMOS HIGH SCHOOL POOL: Summer schedule for public swimming. Adults 35 cents, students 15 cents.

Monday through Friday, 2 to 10 p.m.
Saturday and Sundays, 1 p.m. to 6 p.m.

INTERNATIONAL FOLK DANCE CLUB:

Open to the public. Meets every Tuesday, 8 p.m., Recreation Hall.

SWIMMING CLUB OF LOS ALAMOS, INC., Membership open to adults interested in swimming. Club meets every Sunday, 7 to 9 p.m.

Richard Bidwell Dies



Dr. Richard M. Bidwell, a prominent K Division scientist, died July 26 while climbing Mt. Wheeler with four other Los Alamos men. Bidwell, who was 44, had been with the Laboratory since 1949.

He and his companions—Robert B. Day, Kenneth J. Ewing, Randy Matson and Herbert Ungnade—were climbing above timber line when Bidwell complained of illness and said he wished to return to the car. He collapsed and his companions began to carry him but he died enroute to medical assistance.

Bidwell is survived by his wife, Camille, and two children, Dianna, 6, and Richard, 5.

The family returned to Los Alamos a few months ago after two years in Sao Paulo, Brazil. Bidwell was on leave of absence from the Laboratory while working as a technical assistance expert in nuclear metallurgy with the UN's International Atomic Energy Agency.

Three Retire

JESSIE BELLE ROBERTS retired last month after 12 years as an electronics technician in P-1 group. Mrs. Roberts came to Los Alamos in 1950 with her late husband, Frank, who worked with SD-1. Mr. Roberts died in 1961. Mrs. Roberts left Los Alamos July 29 to live with her daughter in Norwalk, California. She plans to use Norwalk as a "base" while "doing a lot of traveling, both in this country and abroad."

IONE TRIMMER retired in July "to concentrate on being a housewife." Mrs. Trimmer had been a technician in the GMX-3 analytical laboratory for 13 years. Her husband, Philip, also works for GMX-3, but has been a LASL employe for only eight years. The Trimmers came to Los Alamos from California in 1950, but worked first for a jewelery firm in the Community Center. The Trimmer home is in the San Pedro section of Española.

CHARLES G. PHELPS retired June 30 after nine years with LASL's group GMX-9 where he worked as a camera optics specialist. Phelps and his wife, Mildren, moved to Mesa, Arizona, the first of August but plan to return to Los Alamos after a year. Mrs. Phelps teaches second grade at Central elementary school.

NEW HIRES

Hans J. Sembach, Dayton, Ohio, CMB-7.

Raymond Garde, Vaughn, N.M., H-7.

Lorna Rindge, Los Angeles, Calif., SP-LA.

William John Sample, Corry, Pa., SD-2.

Johnny N. Quintana, Espanola, N.M., H-1 (Rehire)

Joseph Nicola Di Marco, New York City, P-14.

Clifton I. Kerns, Los Alamos, GMX-3 (Rehire).

Cynthia Ann Dempsey, Los Alamos, N-7 (Casual).

Violet M. Rarrick, Los Alamos, GMX-7.

Luis Alberto Gonzales, Santa Fe, N.M., SD-1.

James Michael Baca, Santa Fe, N.M., SD-DO (Rehire).

Thomas M. Schultheis, South Bend, Indiana, P-11.

Ann Dorothy Mulford, Los Alamos, CMB-8 (Rehire-Part Time).

Keith James Carroll, New Iberia, Louisiana, CMF-9.

Queva J. Williams, Los Angeles, Calif., SP-LA.

Andrew Raymond Nogar, Chicago, Illinois, SD-1.

George Philip Lawrence, London, England, P-9.

Stephen Edward Canfield, Los Alamos, SP-3 (Short Term).

Joseph Elfego Lopez, Alamosa, Colorado, T-1.

William W. Van Wagoner, Bristol, Conn., SD-1.

George John Lucas, Jr., Pittston, Pa., P-11.

Joseph J. Duben, Los Alamos, K-3 (Rehire).

William P. Bailey, Sr., Garrett, Kentucky, SP-DO.

George Willard Royer, Los Alamos, H-5.

Jack William Macki, Wallace, Idaho, T-5.

Richard Paul Toth, New York City, K-4.

Richard Hugh Bishop, Houston, Texas, GMX-1.

John J. Maher, Santa Fe, N.M., SP-3 (Short Term).

Josephine Sandoval, Los Angeles, Calif., SP-LA.

Richard Willis Getzinger, Hammond, Indiana, GMX-7.

Stanley Walter Moore, Hays, Kansas, N-3.

Carl A. Anderson, Jr., Flushing, N.Y., K-DO.

THEY TROOPED THE WILDS FOR TELEVISION

**NINE LOCAL SCOUTS
SERVED AS ACTORS
FOR NETWORK TV SHOW**

Nine Los Alamos Boy Scouts have been teamed with famed Marlin Perkins and some fascinating examples of New Mexico wildlife and scenery in the production of a major network television show.

The boys, members of Air Explorer Squadron 99, took part in filming the 30-minute show June 25 through July 1 at Philmont Scout Ranch near Cimarron. The program, "Wild Kingdom," will be broadcast November 8 on NBC (KOB-TV, Channel 4).

Scouts appearing are James Van Hecke, Jr., Kent Whyte, Thomas Sattizahn, Ronald Mason, Michael Carson, Relf Price, Michael Kilgore, Gary Smith and Michael Burns. Adult advisors from Squadron 99 were Wes Nicholes and Neil Whyte.

Nearly 14,000 feet of color film were exposed during the 5:30 a.m. to 7 p.m. daily shooting schedule, which ranged over much of the 175,000-acre ranch. The Los Alamos Scouts are depicted coping with a multitude of wilderness situations; they encounter beaver, bear, porcupine, mountain lion, beaver, a buffalo stampede, wild horses and trapped baby antelope.

The show's star, Marlin Perkins, is director of the St. Louis Zoo. He first became a television celebrity a decade ago when he hosted Zoo Parade, weekly TV visits to Chicago's Lincoln Park Zoo, where he was then director.



Led by Marlin Perkins (right) and Naturalist Jim Fowler, Los Alamos Explorer Squadron 99 Scouts hike along shores of pond on way to Wild Kingdom adventure.

Photographs by Neil Whyte.

Filming of television show required packing equipment to far reaches of sprawling ranch "set." Here burros lend their strong backs to those of the Scouts as the shooting moves to different remote location.





New Mexico's Pueblo Indian Tribes have many ancient traditions. Among them are the colorful ceremonial dances that have been conveyed from generation to generation by personal instruction. Performed infrequently, the dances are rarely seen by outsiders except during special tribal feasts

that are open to the public. Pictured in this photograph by Bill Jack Rodgers is the Eagle Dance of San Juan Pueblo as it was performed during the annual Santa Clara Puye Cliffs Ceremonial last month. This dance is a fun affair; the birds drive evil spirits from the dance plaza.



Photographic interpretation by William Thomson

HERSCHEL E. NOBLE
5187 BOULDER
LOS ALAMOS, NEW MEXICO

Since 1944, when Los Alamos scientists developed the world's first homogeneous reactor as a research tool, they have maintained a lively interest in special purpose reactors. Interest now centers on novel fuel systems, such as use of molten plutonium in high-temperature, high-efficiency devices. Other objectives are the development of low-cost nuclear fuel for high-temperature gas-cooled reactors, and thermionic converters for space applications.

Qualified applicants interested in research at Los Alamos are invited to send resumes to:
Director of Personnel,
Division 64-43

los alamos
scientific laboratory
OF THE UNIVERSITY OF CALIFORNIA
LOS ALAMOS, NEW MEXICO

All qualified applicants will receive consideration for employment without regard to race, creed, color or national origin. U.S. Citizenship required.